

Environmental drivers & challenges:

Impulses for a common strategy in the European space sector

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12/11/2015



REPORTING & COMMUNICATION

- Developing a common reporting scheme

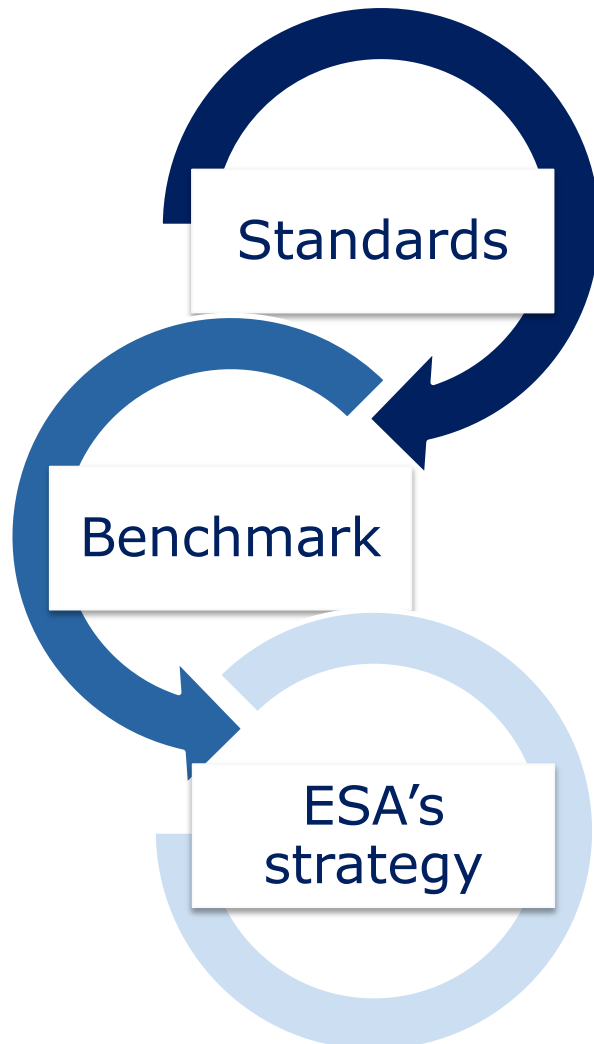
DIALOGUE WITH OUR STAKEHOLDERS

- Environmental concerns in programmes and operations

Reporting and communication



KPI for ESA's reporting on SD: Methodology



- Management systems
- Existing indicators

- Generic Indicators

- Objectives and concerns
- Needed indicators and specific parameters

KPIs for ESA's reporting on SD: Overview



Deploy and assess, in an optimal way, the Agency's framework policy on SD objectives

2008-09

- SD referential: an application of international SD standards to ESA's activity
- 30 SD criteria divided into 5 themes

2009-11

- First generation of KPIs Published in ESA Sustainable Development 2009-2010 Report (January 2011)

2011-13

- Second generation of KPIs and definition of concrete goals disclosed in ESA Sustainable Development 2011-2012 Report (issued in 2013)

2013-2015

- Review and assessment of the implementation of the management goals of the KPIs
- Creation of additional KPIs disclosed in ESA Sustainable Development 2013-14 report (issued in 2015)

KPIs review and assessment of management goals



GOV.8: Participate in European public policy development in the field of SD

| Year | KPI-metrics | Concrete goal | Status |
|---------|---------------------------|--|--------|
| 2014-17 | Collaboration with States | Identify the relevant European legislation | PLAN |

GOVERNANCE

| REF. | MANAGEMENT GOAL | STATUS 2012 | STATUS 2014 |
|---------|---|-------------|-------------|
| * GOV.1 | Ensure that the Agency has a sound governance framework for SD. | CHECK | DO |
| * GOV.2 | Ensure ESA Management System effectiveness, efficiency and integrity. | DO | DO |
| GOV.3 | Ensure effective independent audit functions. | ACT | ACT |

ENVIRONMENT

| REF. | MANAGEMENT GOAL | STATUS 2012 | STATUS 2014 |
|---------------|--|----------------|--------------|
| * ENV.1 | Perform studies with scientific community/technical experts. | DO | DO |
| * ENV.2 | Protect space environment and reduce space debris risks. | CHECK | CHECK |
| * ENV.3 (new) | Develop technologies to protect space environment and reduce space debris risks. | - | DO |
| * ENV.4 | Establish and implement a coordinated and harmonised EMS on all ESA sites. | DO | ACT |
| * ENV.5 | Target Sustainable Building certification for new construction, refurbishment and maintenance. | PLAN/PLAN/PLAN | DO/PLAN/PLAN |
| ENV.6 | Target raw energy reduction/efficiency management by planning and implementing coordinated actions with ESA users from all directorates. | DO | DO |
| ENV.7 | Establish, conduct and implement policies on environmental impacts due to ESA non-programmatic operations. | CHECK | CHECK |
| * ENV.8 | Comply with environmental requirements and legislation; anticipate their impacts. | CHECK | CHECK |

Regarding structure and wording of the KPI the assessment remains unchanged. Nevertheless the status of the indicator changed from PLAN to DO showing increasing commitments in stakeholders dialogue.

SOCIAL

| REF. | MANAGEMENT GOAL | STATUS 2012 | STATUS 2014 |
|-------------|--|-------------|-------------|
| * SOC.1 | Develop employee competencies and knowledge. | ACT | ACT |
| SOC.2 | Prevent and reduce work injuries and occupational diseases. | CHECK | CHECK |
| SOC.3 (new) | Foster professional evolution. | - | CHECK |
| SOC.4 (new) | Promote equal opportunities. | - | CHECK |
| SOC.5 (new) | Develop and preserve social protection system and good working conditions. | - | ACT |
| SOC.6 (new) | Prevent and resolve social conflicts. | - | CHECK |

Objectives

Map ESA's activities and programmes under the perspective of SD and creation of a first snapshot of specific KPIs

Invite to share information, common actions and knowledge among ESA professions

Launch synergies and possible joint SD projects with our stakeholders

Creation

Internal report first: adhesion of ESA staff and contractors to the project

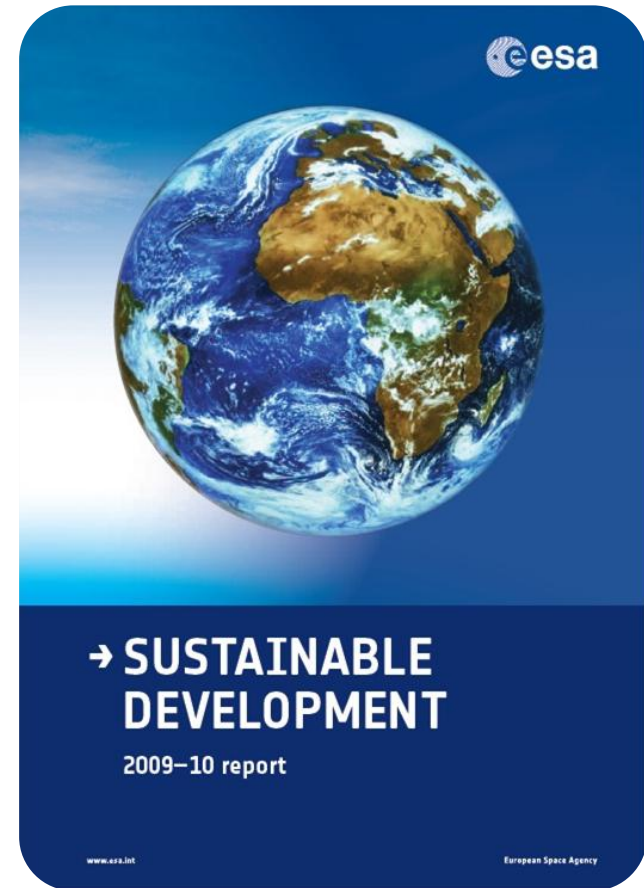
Editorial committee composed by internal experts

Lessons learned

Interest from our stakeholders

Legitimate our actions

Clear objectives to be mentioned



Visual Identity

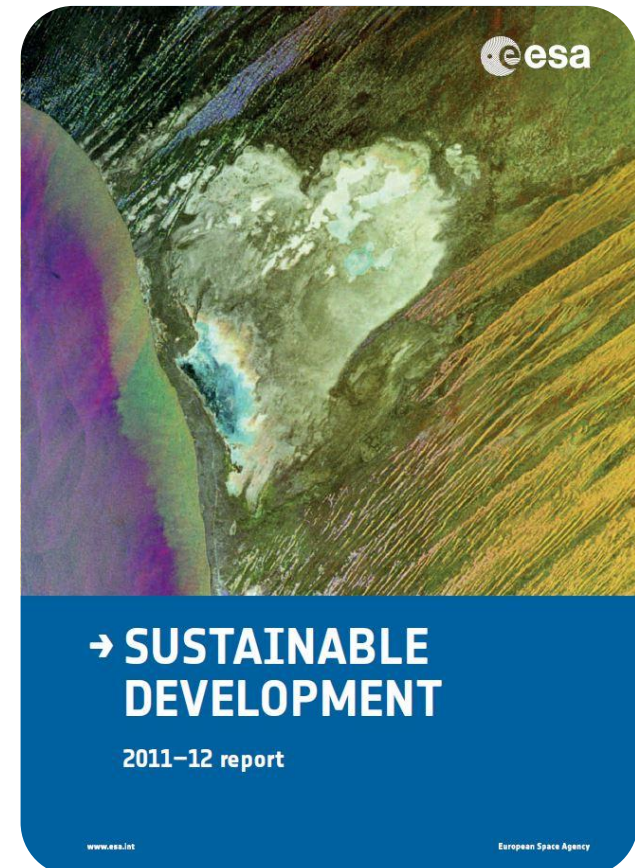
coherence
communication rules

Structure

Structured by the KPIs
Deming Wheel to evaluate the status of the KPIs

Interviews & testimonials

Personalisation



Feedbacks

Feedbacks from stakeholders – integration of their comments

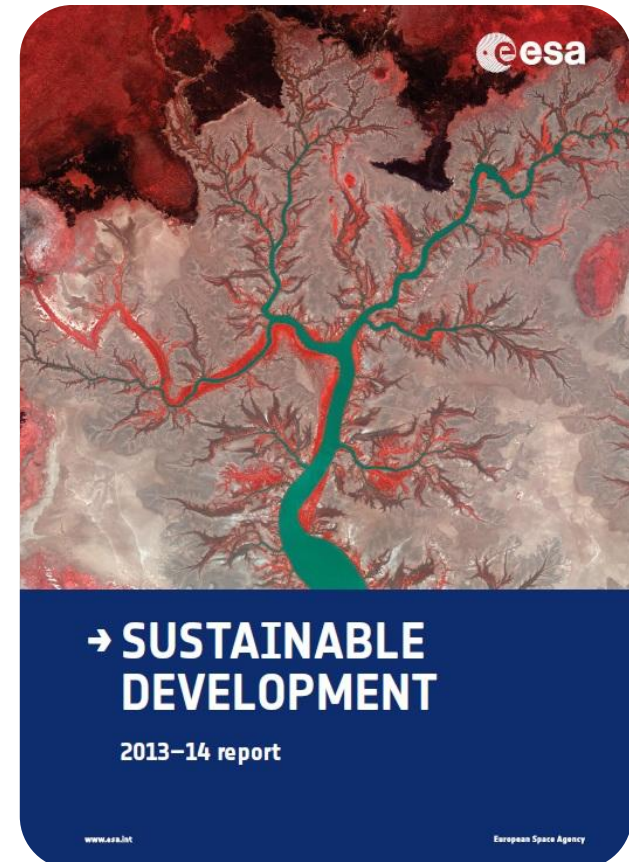
Institutionalisation of the report at corporate level (biennial exercise for the whole Agency and also in the sector)

KPI review

Follow up the management goals in application on the Agency

Dialogue

Interactions with our stakeholders



- A dialogue activity started in 2012

At that time :

- Good vision about sustainability at ESA
but
- no common reflection and network
around sustainability in the space sector
and
- will to have leading role in Europe in the
sustainability field



REPORTING & COMMUNICATION

- Developing a common reporting scheme

DIALOGUE WITH OUR STAKEHOLDERS

- Environmental concerns in programmes and operations

- Build a platform of exchange among actors from different sectors of activity with a strong SD policy on and experience in different sustainability topics.
- Include SD leaders in the discussion, with the expectation to identify common approaches and specific indicators for the space sector, as well as exchange on best practices and discuss potential for cooperation
- Assess how SD principles are being integrated into the space sector, identify concerns and potential solutions

➤ **Create, in the space sector, a systematic dialogue for cooperation on topics of interest**

(environmental reporting, responsible procurement, technical and regulatory requirements -e.g. REACH EU Reg.-, transparency and ethics, etc.)

Overview of the roundtable series



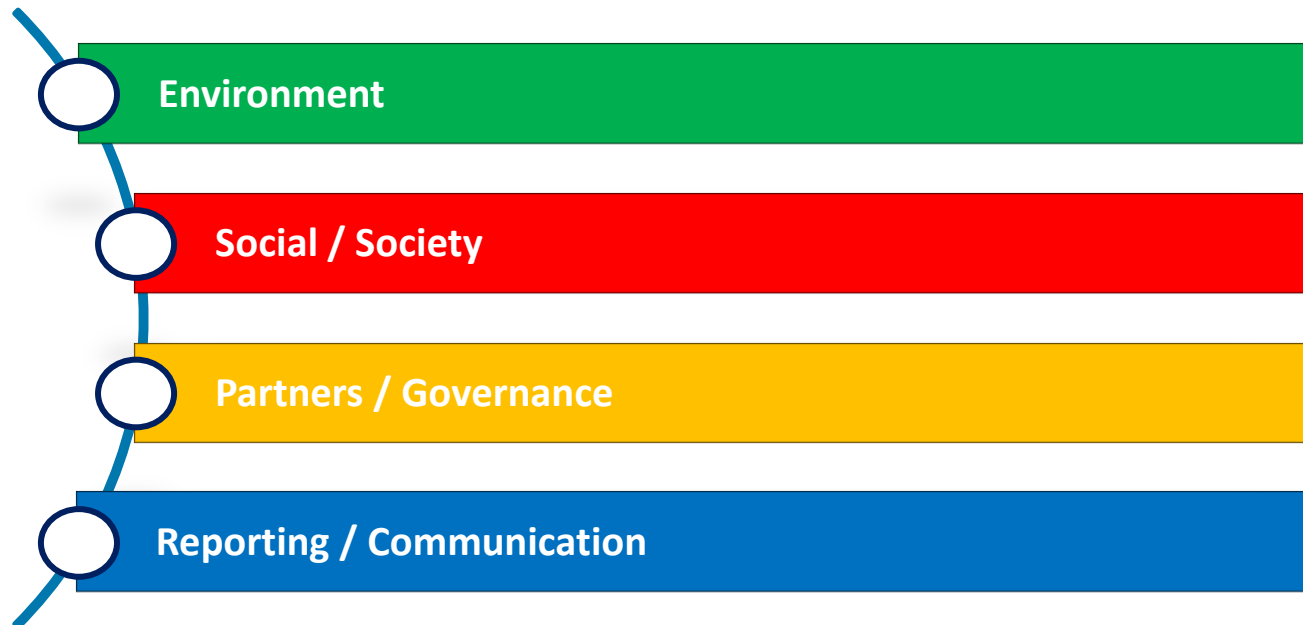
- Actors from the space sector and from other sectors of activity but with a well implemented SD policy in their activity
 - 9 organisations from the space sector involved
 - 15 organisations from other sectors of activity involved
 - 5 delegations involved
- 7 local roundtables
 - SD in corporate strategy of leading companies
 - EMS and dedicated reporting
 - Responsible procurement and dedicated reporting
 - Governance, ethics and social policies
 - SD reporting and communication
 - Social policies and health & safety in an organisation
 - Environmental issues and the environmental performance of buildings
- 3 regional roundtables: Southern/Northern/Central & Eastern European countries
 - Space for sustainability / Sustainability in the space sector
- 1 Workshop: “Developing a joint approach of sustainability in the European space sector”
 - Review of the roundtable series + working groups

Overview – main SD issues



Sustainability in the space sector

Space for sustainability





Environment in the space sector

- **EMS / sustainability performances for common and specific infrastructures**
 - Development of tools to deal with the EMS (common infrastructures)
- **Buildings: construction / maintenance / refurbishments**
 - International standards (ISO 14001)
 - Going far beyond the certification : having no negative impact
 - Buildings management is not only an environmental issue any longer, but also a social challenge
- **Coordination of SD activities in space sector** (LCA, communication, etc.):
 - shared issues i.e. energy consumption unpredictable due to periodical use (launches, astronauts trainings, etc.)
 - space debris issue
 - transportation of launch vehicles
 - use of substances and processes (REACH)

Space for the environment

- EO support understanding and mitigating CC
- Technology transfer for sustainability problems
- Sustainability in outer space
- **Regional specificities –**
 - Arctic (applications and Infrastructures)
 - Baltic (pollution control)
 - Urban planning: traffic / energy Performance of buildings / use space technologies for 3D modelisations
 - “Blue” economy: beneficiaries from EOP investments

Knowledge (and consciousness) of the environmental impacts of the sector / As well as how we affect the environment, the nature and environment has an impact on our performance, productivity, health and well-being



Ensuring the achievement of environment and energy goals

- Goal : The 20/20/20 target
 - Renewable energy
 - CO2 emissions
 - Energy efficiency
- Tools :
 - ISO 14001 certified EMS
 - Web-based Computer Integrated Facility Management
 - Guiding principles for sustainable construction, refurbishment and maintenance
 - Awareness campaigns
- Environmental Impact Monitoring Project Initiative



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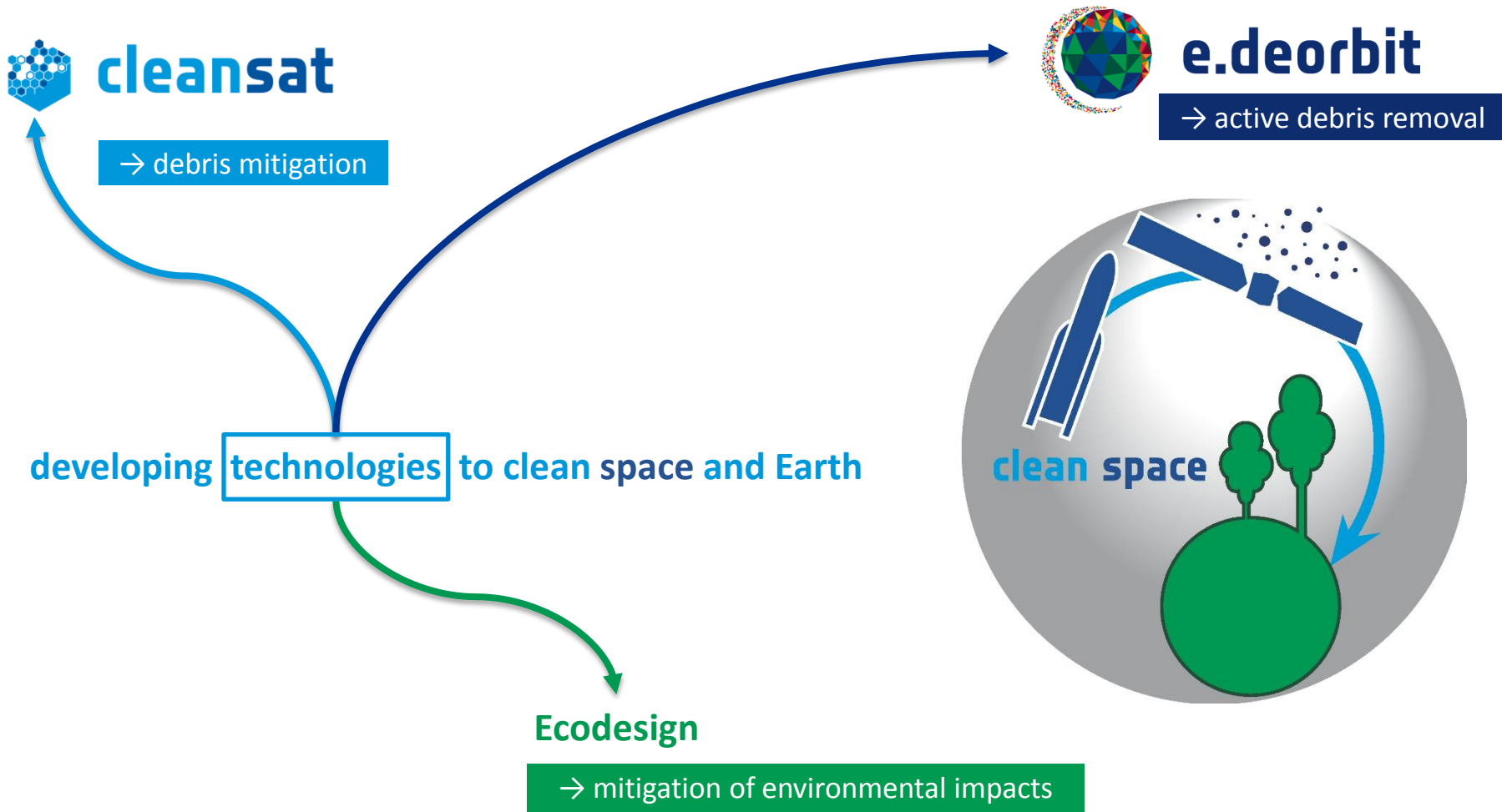
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Focus on ESA Clean Space Initiative



→ ENVIRONMENTAL PROTECTION

Complying with European environmental regulations and answering to European concerns leads to fast innovation and great competitiveness.

→ INNOVATION

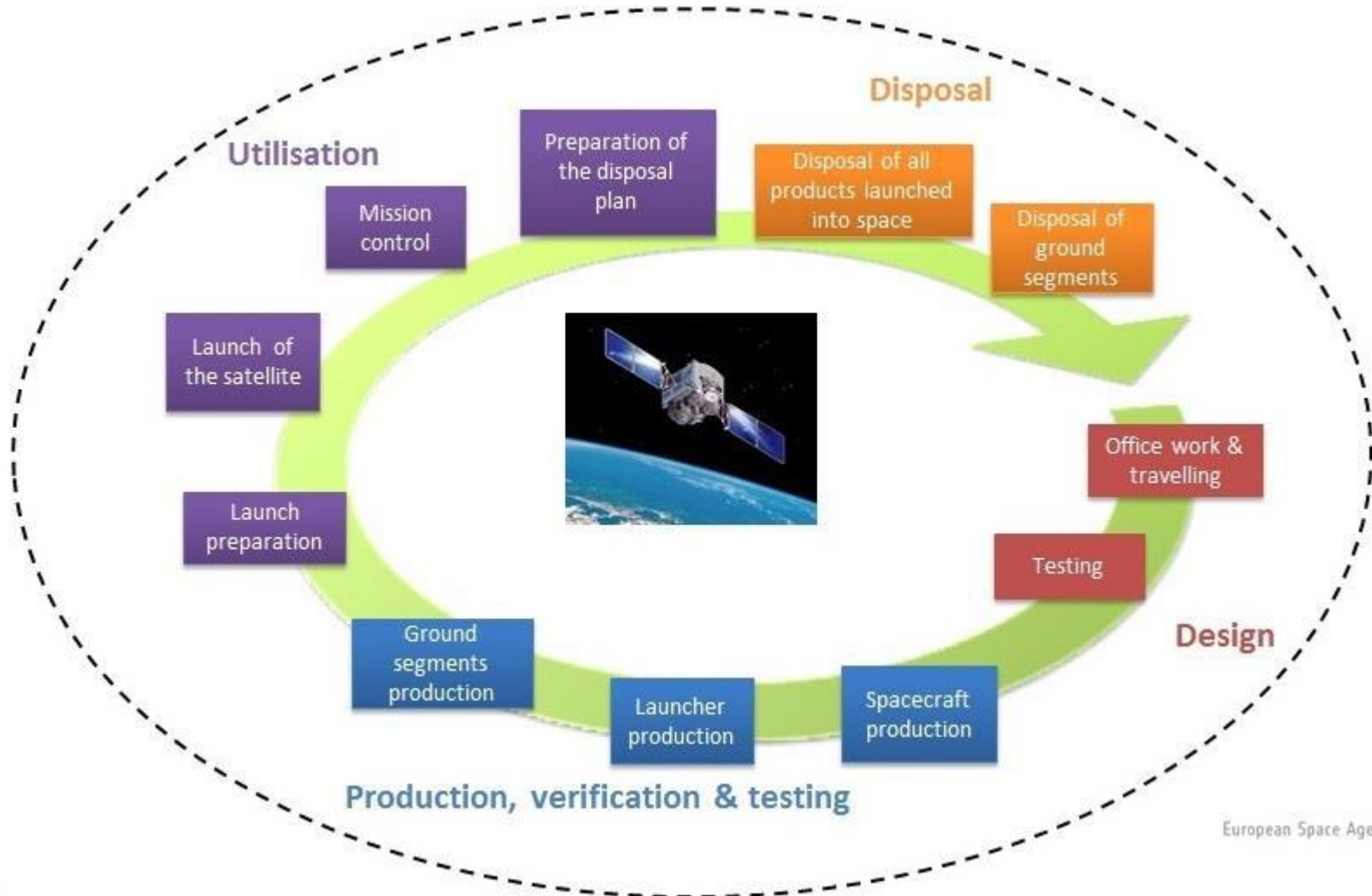
The need for technologies complying with environmental requirements pushes for innovation:

- New materials (e.g. citric acid, new processes)
- New designs (e.g. demisable tanks, sails)
- New capturing mechanism (e.g. net, harpoon)

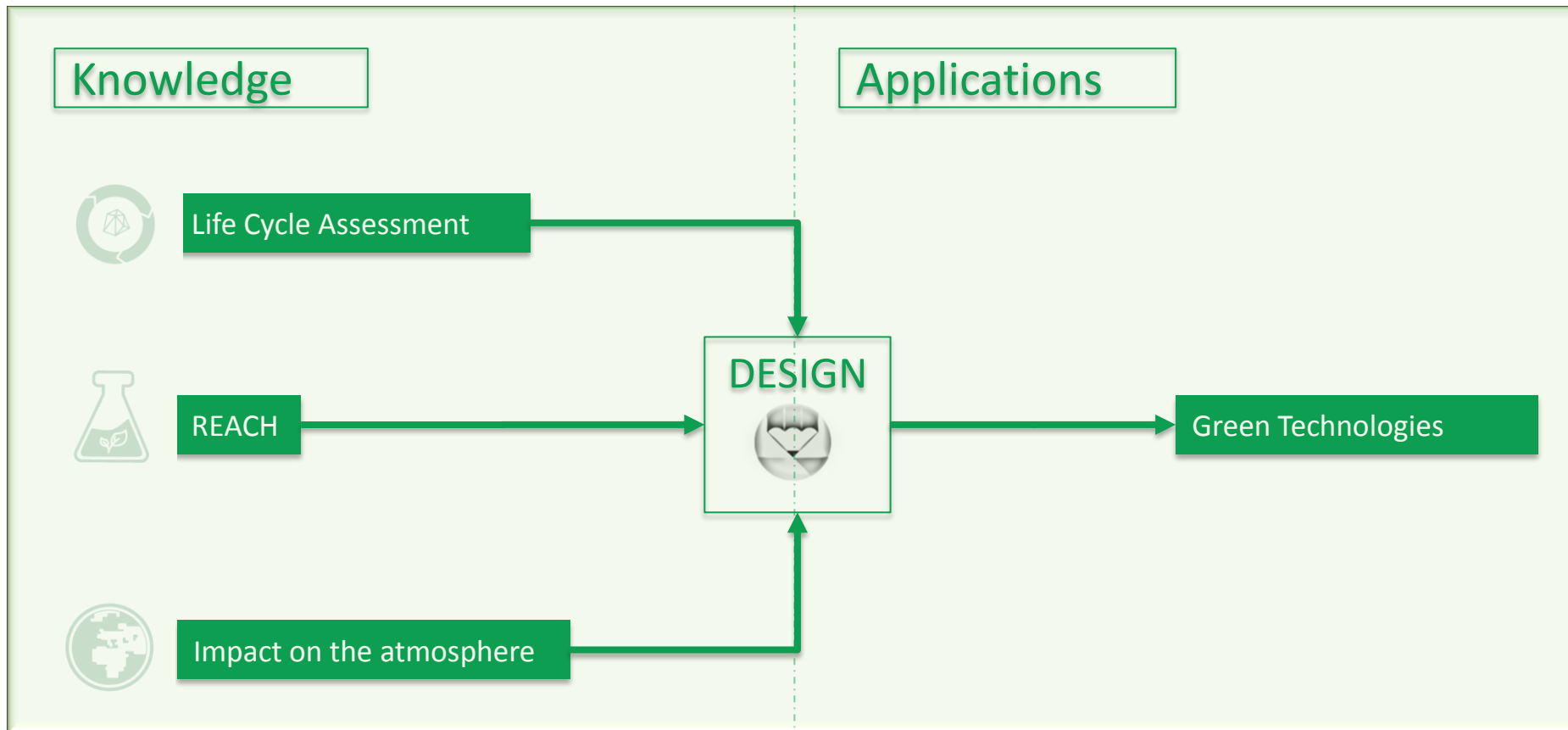
→ COMPETITIVENESS

Technologies to cope with the environmental challenges and advanced regulations opens new markets to Europe. Clean Space supports the European competitiveness by leading proactive research and development on cleaner space technologies for Earth and space

LCA of a space mission



What is Eco-Design?





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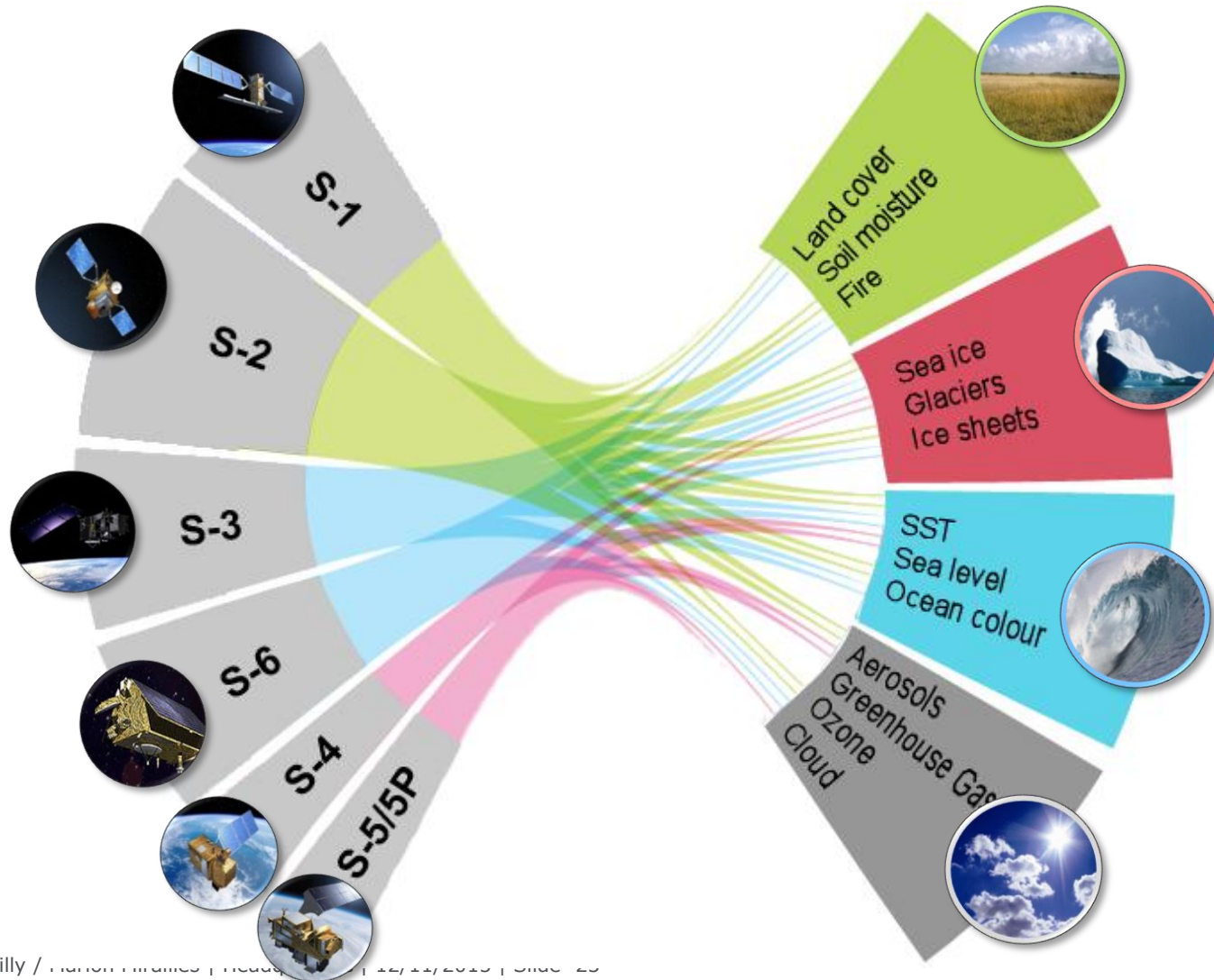
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Copernicus programme and the Sentinel family for climate change monitoring



Environment in the space sector

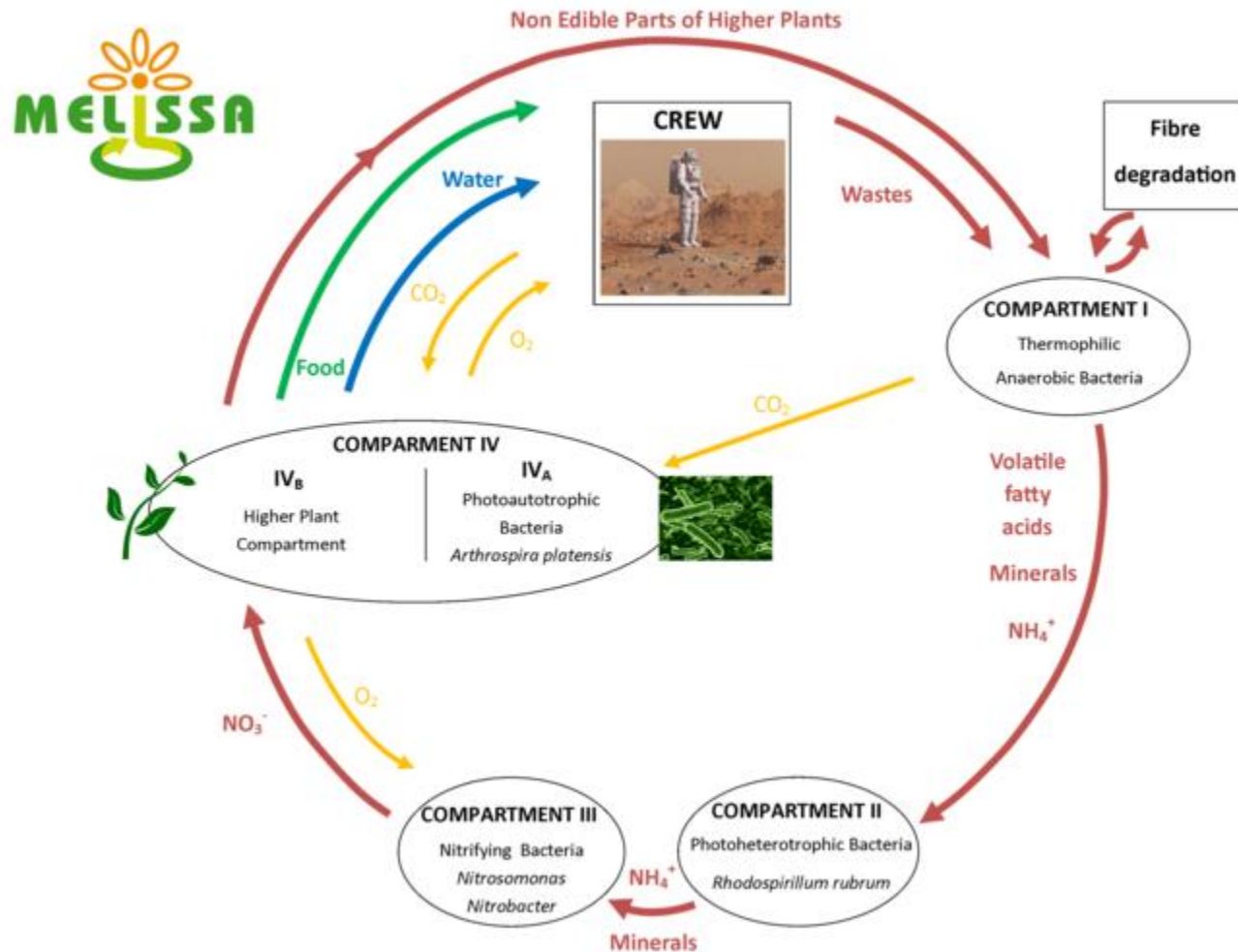
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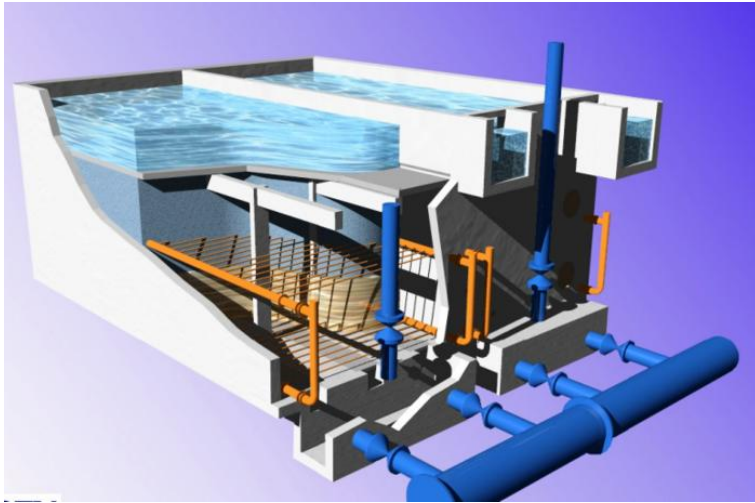
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Water treatment plants using recent space technologies: MELiSSA



Water treatment plants using recent space technologies: MELiSSA



- BIOSTYR® is a nitrifying/denitrifying support that allows the growth and retention of microbial population to assume the biologic depuration of waste waters.
- This technology was developed for MELiSSA compartment 3
- Water treatment plants all over Europe use MELiSSA expertise to clean wastewater.

| Town | Flow m3/d | Town | Flow m3/d |
|---------------|-----------|-----------|-----------|
| Cergy | 40 000 | Roma | 200 000 |
| Nyborg | 13 000 | Lyon | 85 000 |
| Evreux | 20 000 | Alanya | 28 000 |
| Acheres | 15 000 | Colombes | 240 000 |
| Frederikshavn | 10 000 | Herford | 33 000 |
| Melun | 16 000 | Sarragoza | 7 500 |



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Social in the space sector

- **Challenges of the sector:**
 - Promoting diversity in all aspects (gender, seniors, minorities, disabilities, etc.)
 - Work-life balance
 - Multicultural work environment
 - Safety: launch pads: strict safety regulations / use of hazardous materials
- Employees' well-being should become a top priority for companies

Space for the society

- **socio-economic benefits**
 - Investments in space returning
 - Space seen from an utilitarian angle
 - Space seen from a trans-utilitarian perspective (fascination, identity, education)
- EO scientific data and space technologies and applications provide smart solutions for many sectors
- dependence on GNSS is increasing for essential activities (financial services, transport, security, critical infrastructures)

Stimulate stakeholders' involvement in concrete projects / Resistance towards change in administration / administrative issues / creating the "good global citizen" going far beyond environmental issues

Responsibility in the space sector

- An issue for the space sector: going towards a harmonised and integrated responsible procurement
- The quest for sustainability: an opportunity for the industry to create new competitive technologies
- Sustainability can also be an opportunity for the regional space industry
 - Getting more contracts by complying with the increasing requests on environmental requirements
 - Opportunities for SMEs (also in smaller MS)
 - Being actors in sustainability (in space sector), can be an opportunity to strengthen the local industry's competitiveness
 - Regulations (REACH) can be an opportunity for green market development / stimulate R&D and innovation
- Regional cooperation is essential to avoid duplication of efforts and costs

Space for responsible relations

- Ethics considerations
 - Bribery
 - Human rights
 - The "good global citizen"
- The ISS: A model of good governance
- Pushing space solutions on Earth: space brings new technologies, for sustainable activities and also push for innovation (and business opportunities)
- Strict regulations and increasing expectations from stakeholders to reach international standards
 - Enhance good practices to adapt to the market
 - Need to work in close coordination with all actors

Ethics / transparency / cooperation / Accessibility to space data on open access, standardisation and long-term availability to serve sustainability purposes/ Being proactive in terms of SD (top down commitment: SD has to satisfy economic interests)

Communication and reporting in the space sector

Space for reporting and communication

- **Reporting perspectives**
 - Why reporting ?
 - Common reporting for the sector ?
 - Going (or not) to certification ?
 - Necessity of KPIs
 - SD reporting as a tool for strengthening the European Space Policy
- Communication and reporting should go together and support each other

- **Communication, important challenges:**
 - Reach the end-user to use the space data to achieve SD challenges
 - Impact of space applications not enough known by potential users
 - Better communication to policy-makers and decision-makers
- Knowledge (and consciousness) of the impacts of the sector

If there is something special with the space sector : make it visible ! / “Earth is our spaceship”: part which is missing in the communication to large public about space. Having a wide perspective, to make it less conceptual and more concrete. Connect it to the human beings / SD reporting as a societal requirement but also as a policy tool



environment
technologies
communication
reporting
applications
cooperation
space
dialogue
innovation
development
humanity
sharing
awareness
data
trust
LCA
responsibility
KPIs
green
harmonisation
ICA
harmonistaion

Thank you!